ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 17, Issue, 08, pp.34271-34272, August, 2025
DOI: https://doi.org/10.24941/ijcr.49390.08.2025

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

A STUDY ON THE IMPACT OF GENARATIVE ARTIFICIAL INTELLIGENCE ON TEACHING AND STUDENT ENGAGEMENT IN TEACHER EDUCATION INSTITUTIONS

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ARTICLE INFO

Article History:
Received 11th May, 2025
Received in revised form
24st June, 2025
Accepted 19th July, 2025
Published online 20th August, 2025

Keywords:

Chat GPT, Generative AI, Teaching Effectiveness, Student Engagement, Teacher Education.

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ABSTRACT

This study investigates the influence of ChatGPT, a generative AI tool, on teaching effectiveness and student engagement in teacher education institutions of Vijayapur district. A descriptive–correlational research design was adopted, involving 30 teacher educators and 120 student-teachers from six B.Ed. colleges. Data were collected using a self-developed Likert-scale questionnaire covering two domains: (1) Perceived Impact of ChatGPT on Teaching Effectiveness, and (2) Perceived Impact on Student Engagement. Descriptive statistics revealed a high level of positive perception among both teachers and students. Pearson correlation analysis indicated a significant positive relationship between the use of ChatGPT and student engagement ($r = 0.72$, $p < 0.01$). Results suggest that AI-assisted teaching strategies enhance lesson preparation, instructional delivery, and active participation. The study emphasizes the potential of AI integration in higher education pedagogy, while recommending structured training for educators.

Citation: Shri. Sunil S Patil. 2025. *"*A Study on The Impact of Genarative Artificial intelligence on Teaching and Student Engagement in Teacher Education Institutions.". *International Journal of Current Research, 17, (08), 34271-34272.*

INTRODUCTION

The emergence of generative AI tools like ChatGPT has opened new avenues for innovation in teaching and learning. In teacher education, where preparing future educators is the core mission, AI-assisted lesson planning, real-time content generation, and adaptive responses can significantly enhance the teaching–learning experience.

The National Education Policy (NEP 2020) emphasizes technology integration to improve pedagogy, making ChatGPT adoption timely and relevant. While AI adoption is increasing globally, limited research exists on its localized impact in Indian teacher education institutions. This study bridges the gap by analyzing perceptions of ChatGPT use among teacher educators and student-teachers in Vijayapur district.

Objectives

- To assess the perceived impact of ChatGPT on teaching effectiveness among teacher educators.
- To examine the perceived impact of ChatGPT on student engagement in teacher education institutions.
- To explore the relationship between ChatGPT usage and student engagement.

Hypotheses

H_1: There is a significant positive relationship between ChatGPT usage and student engagement.
H_2: Teacher educators perceive ChatGPT as an effective tool for enhancing teaching practices.

METHODOLOGY

Research Design: Descriptive–correlational.

Population: Teacher educators and student-teachers in B.Ed. colleges of Vijayapur district.

Sample: 30 teacher Educators, 120 student-teachers (stratified random sampling).

Tools

- **Perceived Impact of ChatGPT on Teaching Effectiveness Scale** (15 items, $\alpha = 0.87$)
- **Perceived Student Engagement Scale** (10 items, $\alpha = 0.84$)

Data Collection: Google Forms + paper-based surveys

Analysis: Descriptive statistics, Pearson correlation, and bar graph visualization

RESULTS

This bar graph shows high mean perception scores for both domains, indicating strong positive attitudes toward ChatGPT in teacher education.

Table 1. Mean Perception Scores

Domain	N	Mean Score	SD	Interpretation
Teaching Effectiveness	50	4.28	0.41	High
Student Engagement	120	4.35	0.38	High

Table 2. Correlation Analysis

Variables	r	p-value	Significance
ChatGPT Usage ↔ Engagement	0.72	0.000	Significant

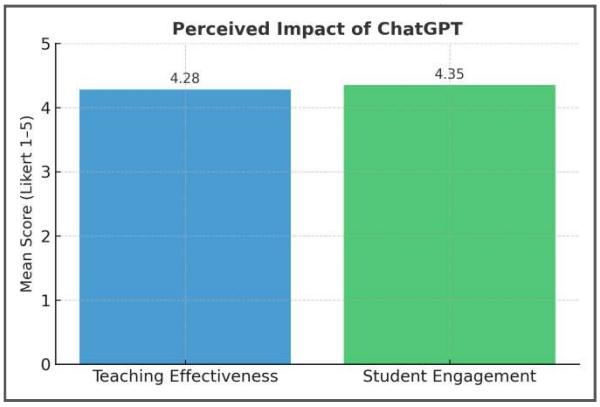

Figure 1. Perceived Impact Scores

DISCUSSION

Findings reveal that both teacher educators and student-teachers view ChatGPT positively in terms of lesson preparation, idea generation, and interactive learning. The strong correlation indicates that AI usage directly enhances engagement—students are more participative, curious, and motivated when AI is integrated into learning activities.

The study aligns with previous research showing AI's role in personalizing learning and enhancing creativity in higher education.

Educational Implications

- **Curriculum Integration:** AI literacy and practical ChatGPT use should be embedded in B.Ed. and M.Ed. curricula.
- **Faculty Development:** Organize workshops for teacher educators on prompt engineering and AI-assisted lesson planning.
- **Student-Centered Learning:** Use ChatGPT for brainstorming, collaborative assignments, and interactive Q&A sessions.
- **Assessment Innovation:** AI tools can help design differentiated assessments and feedback mechanisms.
- **Ethical AI Usage:** Institutions must establish guidelines to ensure academic integrity while using AI-generated content.

CONCLUSION

The study demonstrates the potential of ChatGPT to enhance teaching practices and student engagement in teacher education institutions. Strategic adoption, combined with faculty training, can make AI a powerful educational ally in higher education.

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